

This listing of claims will replace all prior versions, and listings, of claims in the application:

The Status of the Claims

1. (Currently Amended) A method of preventing oxidation of a barrier metal of a semiconductor device, the method comprising:

forming a via hole in a substrate;

depositing $\text{Ti/Ti}_{(1-x)}\text{Al}_x\text{N}$ as a first barrier metal layer on the a bottom and sidewalls of the via hole by means of a plasma chemical vapor deposition;

filling the via hole with a plug material to form a via plug;

performing a planarization process to flatten the via plug;

depositing a second barrier metal layer and a metal line in sequence on the substrate including the via plug; and

depositing an ARC layer of $\text{Ti/Ti}_{(1-x)}\text{Al}_x\text{N}$ on the metal line by means of a plasma chemical vapor deposition.

2. (Original) A method as defined by claim 1, wherein the second barrier metal layer comprises TiN or $\text{Ti/Ti}_{(1-x)}\text{Al}_x\text{N}$.

3. (Original) A method as defined by claim 2, wherein "x" in $\text{Ti}_{(1-x)}\text{Al}_x\text{N}$ has a value between 0.5 and less than 1.

4. (Original) A method as defined by claim 1, wherein the plug material comprises tungsten or aluminum.

5. (Original) A method as defined by claim 1, wherein the plasma chemical vapor deposition is performed using TiCl_4 , AlCl_3 , Ar, N_2 , and H_2 gases.

6. (Original) The method as defined by claim 5, wherein the ratio of $H_2/N_2/Ar$ is between 20/5/50 sccm and 40/10/50 sccm.

7. (Original) A method as defined by claim 1, wherein the plasma chemical vapor deposition is performed using a radio frequency (RF) power between 40W and 60W at a temperature between 400 °C and 500 °C under a pressure between 1 Torr and 2 Torr.

8. (Original) A method as defined by claim 1, wherein "x" in $Ti_{(1-x)}Al_xN$ has a value between 0.5 and less than 1.